

U.S. Patent Application Serial No. 10/726,965
Reply to Office Action dated October 13, 2004

REMARKS

Favorable reconsideration of this application is requested in view of the above amendments and the following remarks. Claims 1-3 and 5-6 are hereby amended. Claims 15-17 are new. Claim 3 is amended to correct dependency.

Support for the amendments to claims 1 and 6 specifying that the calculating unit corrects the temperature (V_m) based on the inputs of the "environmental temperature around the temperature detecting unit" (e.g. V_m) and "the temperature for correction" (e.g. T_{gd}) is found in Figure 6 and page 14, lines 5-19. Further amendments to claims 1 and 6 are of an editorial nature to clarify meaning. The claim 2 amendment reciting that "the calculating unit corrects the detected temperature using a temperature of the cold junction of the thermopile as the environmental temperature" similarly is supported by Figure 6 and page 14, lines 5-19. The claim 5 amendment reciting temperature correction "based on a function of an environmental temperature around a temperature detecting unit that detects said temperature of the object member; and a fourth step of further correcting the detected temperature where the outcome of the third step is corrected based on a function of the temperature obtained in the second step" similarly is supported by Figure 6 and page 14, lines 5-19.

New claim 15 is supported by the equation on page 15, line 29 and page 16, lines 2-10. New claim 16 contains the subject matter of original claim 2. New claim 17 is supported by the equation (2) on page 15, line 29. The calculated temperature (T_{tp}) is given by the expression (1) on page 14, line 11. Note that the calibrated temperature (T_{tc}) is calculated by multiplying the calculated temperature (T_{tp}) by the value from the equation on the right-hand side of the expression (2). See page 16, lines 2-10.

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Claim 1 was rejected as being anticipated by Kamiyama (US 6,367,972 B1). Applicants traverse this rejection. Kamiyama teaches a one-step method of temperature correction. In each of the calculating units (detecting circuits) the output voltage of the temperature detecting unit (infrared ray detecting element 25) is corrected by the subtraction of the environmental temperature voltage (see Figures 4A-4C and column 7, lines 17-35). The environmental temperature is detected by heat-sensitive elements 26 and 27 (see column 6, 10-12). In contrast, claim 1 specifies a two-step temperature correction being accomplished by the calculating unit based on both the environmental temperature and the temperature for correction. Further, Kamiyama does not suggest a solution to the problem of the effects of "infrared rays that are radiated from peripheral members of a determination object member and then are reflected from a surface of the object member" (see page 1, lines 33 to 34). Kamiyama does not suggest correcting the influence of the infrared rays. Favorable reconsideration of claim 1 is requested.

Claims 1-7, 9, and 11-14 were rejected as being anticipated by Gillen (US 5,999,768). Applicants traverse this rejection. Gillen teaches a temperature detecting unit (thermopile 12) that operates isothermally. The thermopile (12) is placed in a heat sink (18), which is kept at a constant temperature (see column 4, lines 56-60). Temperature probe (56) measures the temperature of the heat sink (18) reference junction, which is considered the environmental or ambient temperature (see column 4, lines 23-28). This design does not allow a meaningful measurement of environmental (ambient) temperature (see column 4, lines 23-52) since the temperature of the cold junction of the thermopile (12) is kept constant. Temperature correction based on a function of a constant environmental temperature would not be meaningful. Further, the circuit of Figure 4 shows that VOUT is not corrected based on the temperature of the cold junction (environmental) temperature (56). In contrast, claims 1, 5, and 6 specify correcting the temperature based on both the environmental temperature and the temperature for correction. Favorable reconsideration of claims 1-7, 9, and 11-14 is requested.

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Claim 8 was rejected as being unpatentable over Gillen and further in view of Omata (US 2002/0044801 A1). Omata does not remedy the deficiencies of Gillen noted above. Favorable reconsideration of claim 8 is requested.

Claim 10 was rejected as being unpatentable over Gillen and further in view of Tomita (US 2001/0051057 A1). Tomita does not remedy the deficiencies of Gillen noted above. Favorable reconsideration of claim 10 is requested.

In view of the above, favorable reconsideration in the form of a notice of allowance is requested. Any questions regarding this communication can be directed to the undersigned attorney, Douglas P. Mueller, Reg. No. 30,300, at (612)371-5237.

Respectfully submitted,



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Dated: December 29, 2004

By

A handwritten signature in black ink, appearing to be "D. P. Mueller", written over a horizontal line.

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DPM:mfe